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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,941	03/05/2002	Syun Kyung Lee	201-0148 FGM	5497

28866 7590 12/14/2005

MACMILLAN, SOBANSKI & TODD, LLC
ONE MARITIME PLAZA - FOURTH FLOOR
720 WATER STREET
TOLEDO, OH 43604

EXAMINER

LUM VANNUCCI, LEE SIN YEE

ART UNIT PAPER NUMBER

3611

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,941

Applicant(s)

LEE ET AL.

Examiner

Ms. Lee S. Lum

Art Unit

3611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) all is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. An Amendment was filed 10/5/05 in which Claims 1-37 were cancelled, and Claims 38-52 were added.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 38, 39, 42, 44, 46-48, 50 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki 6729426

Re **Claims 38, 39, 42 and 44**, Suzuki discloses a four-wheel drive assembly (c1, ln 9-10) comprising

Torque transfer assembly, including controller 11 and control actuator 3, having

First mode of operation (c10, ln 51, to c11, first entire paragraph) which increases torque to a slower pair of wheels (c11, ln 12-15; "due to the reduction in the driving force on the rear road wheels"; i.e. the rear wheels are slipping),

(also, in fig 5C, at time T13, driving force is increased to the front wheels)

upon a sensed slip condition (c10, ln 51-65; "the road wheel velocities Vr... are larger than those Vf of front road wheels"),

(also, in fig 5B, at T13, the difference in axle speeds is more than zero), and,

Preemptive mode of operation occurring *only after* the first mode occurs (c11, In 15-28; "However, since the accelerator switch 13 is turned on... the maximum value is continued to be updated...[and] the vehicle can continue the four-wheel drive state with non-zero driving force distribution rate on the front road wheels"; i.e., the driving force/torque split is maintained by increasing torque to the front wheels),

(also, c12, In 8-11; "the continuation of the four-wheel drive state permits a margin in a gripping force on main driven wheels" [i.e., the torque redistribution is continued after the initial slip event]),

(also, the preemptive mode is depicted as occurring about at time T14, as in fig 5C, where increased driving force is maintained at the front axle, while there exists: a difference in axle speeds – fig 5B, and the accelerator pedal is still depressed – fig 5E),

The preemptive mode occurring after determining that a slip condition is likely to occur on the basis of a vehicle speed (c10, In 45-46; "vehicular velocity is in excess of 15 km/hr"),

And, the position of the accelerator member/switch 13 (c11, In 18-19; "However, since the accelerator switch 13 is turned on [i.e., still depressed]"),

The preemptive mode terminating after a certain period of time (10 ms; c8, In 18-20) elapsing without an occurrence of a sensed slip condition (c8, In 18-20; "the flowchart shown in fig 4 is executed [every] 10 ms"), and,

This mode also terminating (c11, In 57-64) upon attainment of a certain vehicular speed (15 km/hr; c11, In 53-54), and the attainment of a certain value for a predetermined attribute; i.e.; convergence of the front and rear axle speeds to a "small difference"; c11, In 38-40.

Re **Claims 46-48, 50, and 52**, Suzuki discloses the elements as provided above, and also discloses

the controller 11 as sensing the wheels being on a surface having a low coefficient of friction (c10, ln 51-65; "the road surface reaction force...is reduced so that at least one of the rear road wheels develops the acceleration slip"),

(also, in fig 5B, where at time T13, a difference between axle speeds begins),

increasing torque to a slower pair of wheels upon a sensed slip condition (c10, ln 65, to c11, ln 15; with emphasis on "the driving force distribution for the front and rear road wheels is controlled in accordance with the...velocity difference updated to the maximum value as shown in fig 5C"; i.e., 50:50 for both axles), after the surface is sensed (i.e., via difference in axle speeds).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 40, 41, 43, 45, 49, 51 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki.

Re **Claims 40 and 53**, Suzuki discloses the elements as provided above, but does not disclose the preemptive mode as terminating after about 30 seconds. However, this feature is clearly application-specific in that the particular application dictates the time period in which this mode functions. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include an appropriate time period, such as exemplified in Suzuki (10 ms), so to effect an optimized operation of the torque transfer assembly.

Re **Claim 41**, Suzuki discloses the recited elements as provided above in paragraph 2.

Re Claims 43 and 49, Suzuki discloses the elements as provided above, but does not disclose the vehicle speed as 25 km/hr. However, this feature is clearly application-specific in that the particular application dictates the optimum speed at which the preemptive mode functions. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include an appropriate vehicle speed, such as exemplified in Suzuki (15 km/hr), so to result in an optimized operation of the torque transfer assembly.

Re Claims 45 and 51, Suzuki discloses the elements as provided above, but does not disclose the difference between the axles as 2 km/hr. However, this feature is clearly application-specific in that the particular application dictates a range/value which would best activate the preemptive mode. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include an appropriate value of which the preemptive mode should be effected, so to produce optimized operation of the torque transfer assembly.

4. RESPONSE TO REMARKS

New rejections are provided, employing Suzuki to obviate the recited elements.

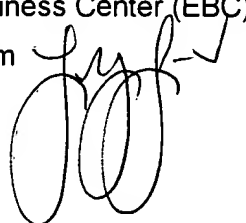
5. The prior art found pertinent to the disclosure, but not relied upon, includes:
Matsuno 6553303, Takasaki et al 5631829.

6. Communication with the Examiner and USPTO

Any inquiry concerning this communication, or others, should be directed to Ms. Lum at 571 272-6649, M-Th, 9-5. If attempts to reach the examiner are unsuccessful, her supervisor, Ms. Lesley Morris is at 571 272-6651. Our fax number is 703 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications: private PAIR only, for published applications: private or public PAIR. For more information re PAIR: <http://pair-direct.uspto.gov>. Questions re private PAIR: contact the Electronic Business Center (EBC) at 866 217-9197.

Ms. Lee S. Lum
Examiner
11/23/05



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